PA - 2063

On the Construction of the Scattering Matrix.II. The Theory with Non-local Interaction.

means that further diturbances are added to the destruction of formal causality by the existence of a formfactor as a result of an unfavourable construction of the scattering matrix. The condition of quasi-causality leads, just like the integral condition of the causality, to a multiplicative representation of the function S_n which depend upon a separable totality of arguments.
Next, the compatibility of this condition of causality with the other conditions A to C imposed upon the matrix is examined (see the first part of this paper). There is always such a series of functions of operators $S_1,...S_n...$ to be found, the terms of which satisfy all conditions from A to D. Then follows an accurate account of the discussion on the construction of the functions of operators of the scattering matrix.
Summary. The main result obtained by the present work the proof that a scattering matrix can be constructed by the generalization of the method of BOGOLJUBOV-STUECKELBERG for the nonlocal theory with any Lagrangian that satisfies the physically perceptible conditions A to D. The theory dicussed here is not to be regarded as complete

ASSOCIATION Mathematical Institute of the Academy of Sciences of the USSR.

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16;24(5) PHASE I BOOK EXPLOITATION SOV/1217

Bogolyubov, Nikolay Nikolayevich; Medvedev, Boris Valentinovich; and Polivanov, Mikhail Konstantinovich

Voprosy teorii dispersionnykh sootnosheniy (Problems of the Theory of Dispersion Relations) Moscow, Fizmatgiz, 1958. 202 p. (Series: Sovremennyye problemy matematiki) 6,500 copies printed.

Ed.: Shirkov, D.V.; Tech. Ed.: Tumarkina, N.A.

PURPOSE: This book is intended for persons working in the quantum field theory who are interested in the method of dispersion relations and its mathematical structure.

COVERAGE: The book contains a detailed presentation of the mathematical structure of the method of dispersion relations. The main problems studied are the method of determining dispersion relations with the exactness needed in ordinary physics work, physical assumptions necessary for obtaining the dispersion relations, and to what degree dispersion relations are con-

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16(1), 24(5)

AUTHORS: Bogolyubov,N.N., Medvedev,B.V., and Polivanov,M.K.

SOV/155-58-2-31/47

TITLE: On the Question on the Indefinite Metric in the Quantum Field Theory (K voprosu ob indefinitivnoy metrike v kvantovoy teorii polya)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 2, pp 137-142 (USSR)

ABSTRACT: The authors join the well-known publication of Heisenberg [Ref 2] in which the "physical" states with a positive norm are completed by "unphysical" states with a negative norm; in the Hilbert space of the state amplitudes this can be reached by the introduction of an indefinite metric. The authors investigate the possibilities resulting in the theory by the introduction of an indefinite metric. According to Heisenberg, the field is represented as a sum of a physical field $\psi(x)$ and a number of fictive fields $\psi_n(x)$. The corresponding state space H then is divided into a subspace H_1 containing only the physical particles of the type ψ, and into its orthogonal complement H_2: $H = H_1+H_2$. The arising specific difficulty (appearance of "unphysical" states in the asymptotic

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On the Question on the Indefinite Metric in the Quantum Field Theory SOV/155-58-2-31/47

expressions of observed magnitudes) demands certain restrictions. Proposals referring to this have already been given by Gupta and Heisenberg. The authors investigate a third possibility: They assume that every amplitude consists of a physical and a non-physical part, where the non-physical part F is determined uniquely by the physical part φ. A physical dispersion matrix $\tilde{S}$ is defined by $\varphi_+ = \tilde{S}\varphi_{-\infty}$, where $\varphi_\pm$ is the state of φ for $t = \pm\infty$, and it is shown that under certain additional postulates $\tilde{S}$ is unitary and the states of H_1 form a complete system for it so that no transitions from H_1 into H_2 are caused by it. Particularly simple states result in the case of the matrix K of Wigner. The proposed method is discussed by an example of the classical mechanics.
There are 4 references, 1 of which is Soviet, and 3 American.

ASSOCIATION: Matematicheskiy institut imeni V.A.Steklova (Mathematical Institute imeni V.A.Steklov)
SUBMITTED: March 5, 1958

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24(3),24(5) SOV/155-58-3-35/37

AUTHORS: Medvedev, B.V., and Polivanov, M.K.

TITLE: Renormalization in the Theory of an Indefinite Metric (Perenormirovka v teorii s indefinitnoy metrikoy)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 3, pp 203-214 (USSR)

ABSTRACT: In [Ref 1] N.N.Bogolyubov and the authors proposed to construct a regular field theory with the aid of the indefinite metric. In the present paper the authors consider the questions of renormalization of this theory. Here the following question is not essential: From the covariant formalism of Tomanaga-Schwinger and from the theory of renormalization for the additions of the fermion masses it follows

(1) $\Delta M \sim \alpha M \ln(\frac{\mu}{M})$, $\mu = \frac{1}{\lambda}$, $\alpha = \frac{e^2}{\hbar c} = \frac{1}{137}$.

On the other hand the classical electrodynamics yields

(2) $\Delta M \sim \frac{\alpha}{\lambda} = \alpha\mu$

for the electron mass, where (2) describes very well the masses of most elementary particles (in the sense of the modern imagination of the existing interactions). The authors have the

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suspicion that (1) is incorrect and ask why a theory which leads to an incorrect formula shows a good agreement with the experiment. According to the authors, the success of the modern quantum electrodynamics can be brought back to the method of regularization of Pauli and Willars [Ref 3] for the elements of the dispersion matrix. Therefore the future regular theory 1) shall keep on the method of Pauli and Willars, 2) for the eigenmasses shall lead to the formula (2) and not to the formula (1). In the present paper it is shown that both demands can be fulfilled by introduction of the indefinite metric.

The authors thank N.N.Bogolyubov and D.V.Shirkov for advices and discussions.

There are 5 figures, and 3 references, 2 of which are Soviet, and 1 American.

ASSOCIATION: Matematicheskiy institut imeni V.A.Steklova AN SSSR (Mathematical Institute imeni V.A.Steklov AS USSR)

SUBMITTED: March 12, 1958

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SOV/2o-121-4-14/54

24(0)

AUTHORS: Medvedev, B. V., Polivanov, M. K.

TITLE: On a Classical Model of an Indefinite Metric (Ob odnoy klassicheskoy modeli indefinitnoy metriki)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 121, Nr 4, pp 623-626 (USSR)

ABSTRACT: In a previous paper, N. N. Bogolyubov and the author suggested to use an indefinite metric in problems of quantum field theory. The purpose of this paper is the explanation of the meaning of this method by investigation of a certain analogy which was formulated according to the classical field theory. The authors investigate 2 classical fields, for instance the complex field $\psi(x)$ and the real field $\chi(x)$ with the Lagrangian interaction $\mathcal{L}_{int} = g \int \psi^*(x)\, \psi(x)\, \chi(x) dx$. The field $\psi(x)$ is assumed to be a true physical field, but the field $\chi(x)$ - a fictive one. The latter may be represented as an expansion:

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$\chi(x) = \sum_{(n)} c_n \chi_n(x)$. Evidently, the fields with a negative energy (or, what is the same, fields with the inverse sign before the Lagrangian of the free field) are the analogon of the "fields with indefinite norm" of the classical theory. The complete Lagrangian which corresponds to these assumptions is given explicitly, and then the field equations are deduced by variation:

$$(\Box - M^2)\,\phi(x) = - g \sum_{(n)} c_n \varphi_n(x)\,\psi(x) = - J(x)$$

$$(\Box - m_n^2)\,\varphi_n(x) = - g c_n \varepsilon_n \overset{*}{\psi}(x)\,\psi(x) = - j_n(x).$$

The latter of these 2 equations may be transformed to an integral form deduced for the fields with the masses m_n. The fictive fields(although they may have energy, momentum and other dynamic characteristics) are assumed to be unable to exchange these characteristics with the physical fields. The authors then give some conditions which correspond to the above-mentioned assumption. One of these conditions allows the elimination of the non-physical field $\varphi_n(x)$ and makes it possible to operate only with the physical field $\psi(x)$.

This leads to the Lagrangian of interaction

$$\mathcal{L}_{int} = g^2 \int \psi(x) \overset{*}{\psi}(x)\, K(x - x')\, \psi(x')\, \overset{*}{\psi}(x')\, dx\, dx'$$

and to the field equations

$$(\Box - M^2)\psi(x) = -g^2 \int dx' \overset{*}{\psi}(x')\, \psi(x)\, K(x - x')\, \psi(x)$$ where the

kernel $K(x - x') = \sum_{(n)} \varepsilon_n c_n^2 \bar{D}_n(x - x')$ is represented as a sum (or as an integral if one introduces a continuous variety of fictive fields) of symmetric Green (Grin) functions $\bar{D}_n(x - x')$ with different masses m_n. K may be chosen as a singular nucleus (or, in the required degree) as a regular one. Elimination of the non-physical field $\varphi_n(x)$ from the initially local field leads to a typically non-local theory. The non-local character of the field equations is connected essentially with the superimposing of a non-local condition which is given in this paper. In quantum theory, these

additional conditions may be superimposed on the field operators or they may be considered as conditions for the maximum permissible amplitudes of state. The authors thank N. N. Bogolyubov for his useful advice. There are 4 references, 1 of which is Soviet.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute imeni V. A. Steklov AS USSR)
Ob"yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research)

PRESENTED: March 18, 1958, by N. N. Bogolyubov, Academician

SUBMITTED: March 8, 1958

SOV-26-58-9-8/42

AUTHORS: Zubarev, D.N., Medvedev, B.V., Candidates of Physico-Mathematical Sciences

TITLE: New Methods in Theoretical Physics (Novyye metody v teoreticheskoy fizike)

PERIODICAL: Priroda, 1958, Nr 9, pp 51-57 (USSR)

ABSTRACT: The article deals with the works of academician N.N. Bogolyubov on new methods in the field quantum theory and the theory of superfluidity and superconductivity, for which he was awarded the Lenin prize of 1958. Each of the 3 fields is described with its historical background and contemporary research. Bogolyubov found out that divergences occurring mathematically in the field quantum theory must be traced back to the fact that entirely new mathematical objects have entered, the so-called "generalizing functions" recently introduced into mathematics in the works of the Soviet mathematician S.L. Sobolev and the French mathematician L. Schwarz (Shvarts). He also worked out a system of physical requirements imposed on the matrix of "scatter". The consecutive theory of superconductivity was worked out mathematically by N.N. Bogolyubov at the end of 1957. In 1938 P.L. Kapitsa had

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discovered that helium loses its viscosity at a temperature near absolute zero. The helium then has acquired the property of superfluidity as was demonstrated by Bogolyubov. He proved it mathematically by the special method of canonic conversions. The same method was successfully applied by him to the problem of superconductivity in 1957. There is 1 photo.

ASSOCIATION: Matematicheskiy institut im. V.A. Steklova AN SSSR/Moskva (The Mathematical Institute imeni V.A. Steklov AS USSR/Moscow).

1. Superconductivity--Theory 2. Helium--Applications 3. Low temperature research 4. Physics--Theory

24(5), 24(7) SOV/20-127-3-16/71

AUTHORS: Medvedev, B. V., Polivanov, M. K.

TITLE: Spectral Conditions as a Possibility of Renormalization

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, pp 537-540 (USSR)

ABSTRACT: The difficulties connected in the quantum field theory and in quantum electrodynamics with the occurrence of a logarithmic pole in the negative, a so-called immaterial state, have as yet not permitted a solution of the problem. The presence of a logarithmic pole in the expression for Green's function is in contradiction to the general physical conceptions concerning the spectral theorems of Källén and Lehmann (Ref 6). Redmond (Ref 7) developed a method of transforming Green's functions, so that they came to agree with the spectral theorems. This process of transformation may have three reasons, of which in the present paper the first case, such as presented by Lee's model, is dealt with: If the exact solution has the non-physical pole, the transformation must lead to a modification of the Hamiltonian. The exact renormalized Green's function for V-particles reads:

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Spectral Conditions as a Possibility of Renormalization

$$G_V(\omega) = g(\omega - m);\ g(x) = \lim \tilde{g}(x+i\varepsilon);\ \tilde{g}(z) = \frac{1}{h(z)}\ ;\ \mathrm{Im}\ x = 0,$$

with $h(z) = z\left\{1 + \frac{g^2}{(2\pi)^2} z \int_{\mu}^{\infty} f^2(\omega) \frac{\sqrt{\omega-\mu^2}\, d\omega}{\omega^2(\omega - z)}\right\}$. It possesses in the function $g(x)$ a non-physical pole at $x = \lambda$. $\tilde{g}(z)$ is analytical within the entire complex plane except in $z = 0$ and along the real axis. For $\tilde{g}(z)$ it holds for $z \to \infty$: $\tilde{g}(z) \to (zN^2)^{-1}$, $N^2 < 0$. Cauchy's theorem is applied to $\tilde{g}(z)$ (with the exception of the real axis), and the spectral representation of $\tilde{g}(z)$ then has the following form:

$$\tilde{g}(z) = \int_{-\lambda}^{\infty} \frac{\bar{I}(x)dx}{z - x} = -\frac{1}{(z+\lambda)N_\lambda^2} + \frac{1}{z} + \int_{\mu}^{\infty} \frac{I(x)dx}{z-x} \qquad (4).$$

This spectral representation contains the non-physical part in $\bar{I}(x)$. The "Redmondization" consists in the fact that for

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Spectral Conditions as a Possibility of Renormalization

$\tilde{g}(z) \rightarrow \tilde{g}'(z) = \tilde{g}(z) + \frac{1}{(z+\lambda)N_\lambda^2}$ is put. In this manner the normalized Green's function $\tilde{g}(z) = \frac{1}{z} + \int_\mu^\infty \frac{I(x)dx}{z-x}$, which corresponds to the Källen-Lehmann theorem is found. It is shown that it differs only by the expression $F(x) \rightarrow F'(x)$, and the latter only by the introduction of the new form factor $f'(\omega)$, i.e. the Redmondized function $g'(x)$ therefore at first leads back to the Hamiltonian used. A renormalizing constant is then introduced, by which the new form factor is determined. The latter avoids apparent renormalization and, consequently, the "immaterial" state. Furthermore, the special case is briefly discussed, in which $f'(\omega) = 1$. In the case of extremely high energies $\omega \sim \lambda$, the form factor acquires resonance character. In conclusion, the authors thank N. N. Bogolyubov and D. V. Shirkov for discussing the results obtained, and P. Redmond for sending

Spectral Conditions as a Possibility of Renormalization SOV/20-127-3-16/71

his preprint. There are 7 references, 3 of which are Soviet.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute imeni V. A. Steklov of the Academy of Sciences, USSR). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: April 11, 1959, by N. N. Bogolyubov, Academician

SUBMITTED: April 8, 1959

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S/020/60/135/005/013/043
B019/B067

24.4500

AUTHOR: Medvedev, B. V.

TITLE: Axiomatic Method and Perturbation Theory

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, pp. 1087-1090

B

TEXT: The Hamilton formalism is usually used as ansatz in the quantum field theory. The difficulties connected herewith led to the development of another method, called the axiomatic method. The author points to known papers by Lehmann, Symazik, and Zimmermann (Refs. 1, 2), and states that N. N. Bogolyubov, M. K. Polivanov and himself (Ref. 4) proceeded from a formalism originally suggested by Heisenberg (Ref. 3). When studying the dispersion relations, they restricted themselves to the scattering matrix. In all variants of the axiomatic ansatz, problems arose as to the compatibility of the axiomatic system and its sufficiency. The present paper deals with the study of the second problem. The author shows that, within the perturbation theory, the formal development of a scattering matrix according to powers of the coupling constant from the main conditions of

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Axiomatic Method and Perturbation Theory

S/020/60/135/005/013/043
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the axiomatic ansatz takes place with the same degree of arbitrariness as in the ordinary theory. He proceeds from designations introduced by Bogolyubov et al. (Ref. 4) and the results they obtained. The author thanks N. N. Bogolyubov, who had suggested this subject, and M. K. Polivanov for valuable discussions. There are 5 references: 2 Soviet, 2 Italian, and 1 German.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences USSR), Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: June 28, 1960, by N. N. Bogolyubov, Academician

SUBMITTED: June 6, 1960

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MEDVEDEV, B.V.

Axiomatic method and perturbation theory. Dubna, Izdatel'skii otdel Ob"edinennogo in-ta iadernykh issledovanii, 1961. 8 p.

1. V.A.Stekloff Mathematical Institute of the Academy of Sciences, Moscow, USSR & Joint Institute for Nuclear Research, Dubna, USSR. (No subject heading)

MEDVEDEV,B.V.; POLIVANOV, M.K.

On the degrees of growth of matrix elements in the axiomatic method. Dubna, Ob"edinennyi in-t iadernvkh issl. 1961. 19 p.

1. V.A.Stekloff Mathematical Institute of the Academy of Science, Moscow, USSR (for Polivanov).
(No subject heading)

22135

S/056/61/040/003/015/031
B102/B205

24.4500

AUTHOR: Medvedev, B. V.

TITLE: Functional expansion of the scattering matrix in normal products of asymptotic fields

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 3, 1961, 826-838

TEXT: As quantum-field theoretical studies based on the Hamilton mechanism involve many difficulties, N. N. Bogolyubov and D. V. Shirkov have worked out a new method which is frequently, though not quite correctly, called "axiomatic". In the past few years it has frequently been applied in connection with dispersion relations. When using the "axiomatic" method, it is possible to proceed either from Lehmann's assumption of the existence of Heisenberg field operators at any point or from Heisenberg's conception of the scattering matrix (Zs.Phys. 120, 513, 673, 1943). The latter procedure has been adopted by Bogolyubov, Medvedev, and M. K. Polivanov (Ref. 6) in connection with the theory of dispersion relations. The present author has now used the relations

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developed in Ref. 6 (Voprosy teorii dispersionnykh sootnosheniy, Fizmatgiz, 1958) to derive a number of formulas that give a formal expression of the coefficient functions of the expansion of the scattering matrix in normal products of asymptotic fields by chronological products of the current operators and of a set of certain operators (Λ_y). This has been done within the framework of the "axiomatic" method and without the use of perturbation theory. First, the properties of the scattering matrix are investigated, and the condition of causality is strictly formulated with the aid of eight lemmas including conclusions and proofs. It is shown that the two formulations of the condition of causality

$$\frac{\delta}{\delta\varphi(x)}\left(\frac{\delta S}{\delta\varphi(y)}S^{+}\right) = \frac{\delta S^{(1)}(y)}{\delta\varphi(x)} = 0 \text{ for } x \lesssim y \quad (18)$$ and

$$S^{(2)}(x_1,x_2) = S^{(1)}(x_{j_1})S^{(1)}(x_{j_2}), \text{ for } x_{j_1} \gtrsim x_{j_2} \quad (23)$$ are equivalent. Next, several systems of equations are derived for the determination of the coefficient functions. Thus, one obtains the system

Functional expansion of the...

$$\Phi^n(z_1,\ldots,z_n)=P\left(\frac{z_1}{z_1,\ldots,z_n}\right)\Theta(z_1;z_2,\ldots,z_n)\sum_{m=0}^{\infty}\frac{(-i)^m}{m!}\times$$

$$\times\int dx_1,\ldots!dx_m dy_1\ldots dy_m\,\Phi^{1+m}(z_1,y_1,\ldots,y_m)\,D^{(-)}(y_1-x_1)\ldots$$

$$\ldots D^{(-)}(y_m-x_m)\,\Phi^{n-1+m}(x_1,\ldots,x_m,z_2,\ldots,z_n). \qquad (25)$$

which is analogous to that derived by Lehmann et al. (Nuovo Cim. 1, 205, 1955), and also

$$\Phi^n(x_1,\ldots,x_n)=P\left(\frac{x_1,\ldots,x_s}{x_{s+1},\ldots,x_n}\right)\Theta(x_1,\ldots,x_s;x_{s+1},\ldots,x_n)\sum_{r=0}^{\infty}\sum_{\nu=0}^{\infty}\sum_{\mu=0}^{\infty}\frac{r+\nu+\mu}{r!\nu!\mu!}\times$$

$$\times\int dz_1\ldots dz_r du_1\ldots du_\nu\int du_1'\ldots du_\nu' dv_1\ldots dv_\mu\int dz_1'\ldots dz_r' dv_1'\ldots dv_\mu'\times$$

$$\times\Phi^{s+r+\nu}(x_1,\ldots,x_s,z_1,\ldots,z_r,u_1,\ldots,u_\nu)D^{(-)}(z_1-z_1')\ldots D^{(-)}(z_r-z_r')D^{(-)}(u_1-u_1')\ldots$$

$$\ldots D^{(-)}(u_\nu-u_\nu')\,\Phi^{\nu+\mu}(u_1',\ldots,u_\nu',v_1,\ldots,v_\mu)D^{(-)}(v_1-v_1')\ldots D\quad(v_\mu')\times$$

$$\times\Phi^{n-s+r+\mu}(z_1',\ldots,z_r',v_1',\ldots,v_\mu',x_{s+1},\ldots,x_n) \qquad (26)$$

the structure of which is illustrated by the graph equation

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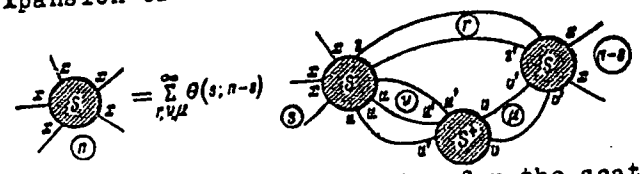
Functional expansion of the...



Following this, the functional expansion for the scattering matrix is determined.

$$S^{(n)}(x_1, \ldots, x_n) = (-i)^n T(\Lambda_1(x_1) \ldots \Lambda_1(x_n)) +$$
$$+ \sum \frac{(-1)^m}{m!} P(x_1, \ldots, x_{\nu_1} | x_{\nu_1+1}, \ldots, x_{\nu_1+\nu_2} | \ldots | x_{\nu_1+\ldots+\nu_{m-1}+1}, \ldots, x_n) \times$$
$$\times T[\Lambda_{\nu_1}(x_1, \ldots, x_{\nu_1}) \ldots \Lambda_{\nu_m}(x_{\nu_1+\ldots+\nu_{m-1}+1}, \ldots, x_n)] - i\Lambda_n(x_1, \ldots, x_n), \quad (28)$$

is obtained for the radiation operators and

$$\Phi^n(x_1, \ldots, x_n) = \langle 0 | T[j(x_1) \ldots j(x_n)] | 0 \rangle + \sum \frac{i^{n-m}}{m!} P(x_1, \ldots, x_{\nu_1} | \ldots | \ldots, x_n) \times$$
$$\times \langle 0 | T[\Lambda_{\nu_1}(x_1, \ldots, x_{\nu_1}) \ldots \Lambda_{\nu_m}(\ldots, x_n)] 0 \rangle + i^{n-1} \langle 0 | \Lambda_n(x_1, \ldots, x_n) | 0 \rangle, \quad (34)$$

for the coefficient functions of the S-matrix. The latter give the structure of a functional expansion of the scattering matrix in normal

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Functional expansion of the...

products of asymptotic fields:

$$S = \sum_{\nu=0}^{\infty} \frac{(-i)^{\nu}}{\nu!} \int dx_1 \ldots dx_{\nu} \Phi^{\nu}(x_1, \ldots, x_{\nu}) :\varphi(x_1) \ldots \varphi(x_{\nu}): \qquad (10)$$

N. N. Bogolyubov and M. K. Polivanov are thanked for interest and discussions. There are 1 figure and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Matematicheskiy institut Akademii nauk SSSR (Institute of Mathematics, Academy of Sciences USSR); Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: September 6, 1960

Card 5/5

24.7100 (1153, 1160, 1454)

28928
S/056/61/041/004/012/019
B113/B112

AUTHORS: Medvedev, B. V., Polivanov, M. K.

TITLE: Degrees of growth of matrix elements in an axiomatic method

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 4(10), 1961, 1130 - 1141

TEXT: The authors study the degree of arbitrariness in which the degrees of growth can be indicated for different matrix elements. The study of the simple case of a self-acting field with spin 0 may be conducted without using the perturbation theory. The matrix elements of the transitions between states on the energy surface of the two Hermitian operators J and J(x) are interrelated by

$$J(p, p_1, \ldots, p_l; q_1, \ldots, q_s) =$$
$$= P\left(\frac{' q_1}{q_2, \ldots, q_s}\right)\delta(p - q_1)\, J(p_1, \ldots, p_l; q_2, \ldots, q_s) -$$
$$- \frac{i}{(2\pi)^{3/2}\sqrt{2p^0}}\int dx\, J(x \mid p_1, \ldots, p_l; q_1, \ldots, q_s')\exp\left\{i\left(p + \frac{P-Q}{2}\right)x\right\}, \quad (9')$$

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Degrees of growth of matrix elements...

$$J(p_1, \ldots, p_l; q, q_1, \ldots, q_s) =$$
$$= P\left(\frac{p_1}{p_2, \ldots, p_l}\right)\delta(p_1 - q)\, J(p_2, \ldots, p_l; q_1, \ldots, q_s) -$$
$$- \frac{1}{(2\pi)^{3/2}\sqrt{2q^0}}\int dx\, J(x|p_1, \ldots, p_l; q_1, \ldots, q_s)\exp\left\{i\left(-q + \frac{P-Q}{l^2}\right)x\right\}. \quad (9')$$

and

$J(x) - J(-x) = i\{j(x/2)j(-x/2) - j(-x/2)j(x/2)\}$ (10). The operator $J(x)$ is additionally restricted by the causality condition. $J(x) = 0$ for $x \lesssim 0$ (11). (9) - (11) constitutes a system of equations for determining the matrix elements of operators $J(x)$ and J. J is the Heisenberg operator of the current, and $J(x)$ is a delaying radiation operator. The matrix elements of J contain one momentum $P-Q \neq 0$, $P = \sum_1^l p_i$, $Q = \sum_1^s q_j$, and the matrix elements of $J(x)$ contain two such momenta which do not lie on the energy surface. To eliminate $J(x)$ from the system, the modified Eq.(10) is multiplied by $\Theta(x^0)$ taking account of (11). One substitutes the resultant equation into (9'), and obtain an infinite system of interrelated equations and an analogous system derived from (9''). For relativistic-

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Degree of growth of matrix elements...

invariant matrix elements, the basic system has the form

$$I(p, p_1, \ldots, p_l; q_1 \ldots, q_s) =$$

$$= P\left(\frac{q_1}{q_2, \ldots, q_s}\right) \sqrt{2p^0 2q_1^0}\, \delta(\mathbf{p} - \mathbf{q}_1)\, I(p_1, \ldots, p_l; q_2, \ldots, q_s) -$$

$$- (2\pi)^{3/2} \sum_{\nu}^{\infty} \frac{1}{\nu!} \int \frac{dk_1 \ldots dk_\nu}{2k_1^0 \ldots 2k_\nu^0} I(p_1, \ldots, p_l; k_1, \ldots, k_\nu)\, I(k_1, \ldots, k_\nu; q_1, \ldots, q_s) \times$$

$$\times \left\{\frac{\delta(\mathbf{p} + \mathbf{P} - \mathbf{K})}{K^0 - P^0 - p^0 - i\varepsilon} - \frac{\delta(\mathbf{p} - \mathbf{Q} + \mathbf{K})}{-K^0 + Q^0 - p^0 - i\varepsilon}\right\}. \qquad (16')$$

$$I(p_1, \ldots, p_l; q, q_1, \ldots, q_s) =$$

$$= P\left(\frac{p_1}{p_2, \ldots, p_l}\right) \delta(\mathbf{p}_1 - \mathbf{q}) \sqrt{2p_1^0 2q^0}\, I(p_2, \ldots, p_l; q_1, \ldots, q_s) -$$

$$- (2\pi)^{3/2} \sum_{\nu}^{\infty} \frac{1}{\nu!} \int \frac{dk_1 \ldots dk_\nu}{2k_1^0 \ldots 2k_\nu^0} I(p_1, \ldots, p_l; k_1, \ldots, k_\nu)\, I(k_1, \ldots, k_\nu; q_1, \ldots, q_s) \times$$

$$\times \left\{\frac{\delta(-\mathbf{q} + \mathbf{P} \quad \mathbf{K})}{K^0 - P^0 + q \quad i\varepsilon} - \frac{\delta(-\mathbf{q} - \mathbf{Q} + \mathbf{K})}{-K_0 + Q^0 + q^0 - i\varepsilon}\right\}. \qquad (16'')$$

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is analogously obtained from (9''). Further, the total degree of growth is considered for steady extension of all momenta. It is demanded that a finite index of growth (a minimum integer $\omega(l,s)$) should exist for each matrix element l and s with momenta of any kind, so that with an extension of all momenta $p_1 = {}_1p, \ldots, p_l = {}_lp, q_1 = {}_1q, \ldots, q_s = {}_sp$, (21) the matrix element $I(p_1,\ldots,p_l; q_1,\ldots,q_s)$ grows more slowly than $P^{\omega(l,s)+\alpha}$ for any $\alpha > 0$. Theories in which this condition is fulfilled are called renormalizable theories. The question is studied as to whether (16) is restricted in the choice of the numbers $\omega(l,s)$. It follows from (16) that

$$\omega(l+1, s) \geqslant \omega(l, \nu) + \omega(\nu, s) + 2\nu - 4, \qquad (23')$$

$$\omega(l, s+1) \geqslant \omega(l, \nu) + \omega(\nu, s) + 2\nu - 4, \qquad (23'')$$

where $\nu \geqslant 1$, $l + s \geqslant 1$, $\nu + l \geqslant 2$, $\nu + s \geqslant 2$ (24). Since, however, $\omega(l,s) = \omega(l+s)$, one obtains $\omega(l+s+1) \leqslant \omega(l+\nu) + \omega(\nu+s) + 2\nu - 4$ (27). A partial solution is given by $\omega_0(n) = 3 - n$, the general solution by $\omega(n) = 3-n+N(n)$.

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Degrees of growth of matrix elements...

Thus, the basic system of inequalities has the form $N(l + s + 1) \geqslant N(l + \nu) + N(s + \nu)$. The upper bound of $\Omega(n)$ is given by $\Omega_0(n) = 3 - n$ for all $n \geqslant 2$, the lower bound of $N(n)$ by $N(2) + (n - 2)N(2) = (n - 1)N(2)$. Particularly close restrictions occur in so-called self-renormalizable theories for which the conditions (23) assume the form

$$\omega(l+1, s) = \max_{\nu} \{\omega(l, \nu) + \omega(\nu, s) + 2\nu - 4\},$$
$$\omega(l, s+1) = \max_{\nu} \{\omega(l, \nu) + \omega(\nu, s) + 2\nu - 4\}. \quad (39),$$

and (30) the form $N(l + s + 1) = \max\{N(l + \nu) + N(s + \nu)\}$ (40). The solution of system (40) has the form $N(2k) = -a$, $N(2k + 1) = 0$, where $k \leqslant n + 1$, and a is an arbitrary integral non-negative number. The general expression for the possible indices of the degrees of growth of the matrix elements I in the self-renormalizable theory has the form $\Omega(2k) = 3 - 2k - a$, $\Omega(2k + 1) = 2 - 2k$, $a \geqslant 0$, $a \in N$. The authors thank N. N. Bogolyubov, V. S. Vladimirov, and I. F. Ginzburg for discussions and remarks. Shirkov is mentioned. There are 11 references: 6 Soviet and 5 non-Soviet. The

Card 5/6

reference to the English-language publication reads as follows: Ref. 11: Gordon Baym. Phys. Rev., 117, 886, 1960.

ASSOCIATION: Matematicheskiy institut Akademii nauk SSSR (Institute of Mathematics of the Academy of Sciences USSR). Ob''yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: March 22, 1961

Card 6/6

36910
S/020/62/143/005/006/018
B104/B102

24.4500

AUTHORS: Medvedev, B. V., and Polivanov, M. K.

TITLE: The role of renormalization terms in an approach to the quantum-field theory with the aid of dispersion

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 5, 1962, 1071 -1074

TEXT: In a previous paper (ZhETF, 41, 1130 (1961)) the authors expressed the opinion that non-trivial solutions in the quantum-field theory may be discovered only on account of the renormalization terms necessary in connection with the infinities. This is demonstrated in the present paper in which the mass renormalization terms are studied. From the system

$$I(p,(p)_i;(q)_s) = P\left(\frac{q_1}{(q)_{s-1}}\right)\sqrt{2p^0 2q_1^0}\,\delta(p-q_1)\,I((p)_i;(q)_{s-1}) -$$

$$-(2\pi)^{\nu_k}\sum_{\nu}^{\infty}\frac{1}{\nu!}\int\frac{(dk)_\nu}{(2k^0)_\nu}\,I((p)_i;(k)_\nu)\,I((k)_\nu;(q)_s)\times$$

$$\times\left\{\frac{\delta(p+\sum p_i-\sum k_\nu)}{\sum k_\nu^0-\sum p_i^0-p^0-i\varepsilon}-\frac{\delta(p-\sum q_i+\sum k_\nu)}{-\sum k_\nu^0+\sum q_i^0-p^0-i\varepsilon}\right\};$$

Card 1/3

The role of renormalization...

$$I((p)_l;\ q, (q)_s) = P\left(\frac{p_1}{(p)_{l-1}}\right)\sqrt{2p_1^0 2q^0}\,\delta\ (p_1 - q)\ I((p)_{l-1};\ (q)_s) -$$

$$- (2\pi)^{3/2}\sum_{\nu}^{\infty}\frac{1}{\nu!}\int\frac{(dk)_\nu}{(2k^0)_\nu}\ I((p)_l;\ (k)_\nu)\ I((k)_\nu;\ (q)_s) \times$$

$$\times\left\{\frac{\delta(-q + \sum p_i - \sum k_\nu)}{\sum k_\nu^0 - \sum p_l^0 + q^0 - i\varepsilon} - \frac{\delta(-q - \sum q_j + \sum k_\nu)}{-\sum k_\nu^0 + \sum q_j^0 + q^0 - i\varepsilon}\right\}.$$

studied in the above-mentioned paper and from the stability conditions of single-particle states the authors conclude that, in the absence of mass renormalization terms, all the matrix elements of the structures $I(p)_1;-)$ or $I(-;(q)_1)$ become zero. This paradoxon is explained as follows: The absence of renormalization terms is essential in the reasoning conducted here. This could be proved if all the integrals of Eq. (1) were convergent. It is concluded that it is impossible to elaborate a non-trivial local theory without divergences. Nature can be described within the framework of a local theory only by a theory with divergences. Even in the presence of a mass renormalization term it is impossible to avoid

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triviality if the theory does not contain at least one charge-type renormalization. N. N. Bogolyubov is thanked for discussions.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences USSR). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

PRESENTED: November 28, 1961, by. N. N. Bogolyubov, Academician

SUBMITTED: November 15, 1961

Card 3/3

FEDYANIN, V.K.[translator]; KHOZYAINOV, V.T. [translator]; MEDVEDEV, B.V., red.; SHIRKOV, D.V., red.; LIVSHITS, B.L., red.

[What do physicists think about] Nad chem dumaiut fiziki. Pod red. B.V.Medvedeva i D.V.Shirkova. Moskva, Fizmatgiz. No.1. [Nuclear physics] Fizika atomnogo iadra. 1962. 99 p. Tranlsated from the English. (MIRA 17:6)

MEDVEDEV, B.V.

Asymptotic condition stipulated by Lehman, Symanzik, and Zimmerman. Dokl. AN SSSR 153 no.2:313-316 N '63. (MIRA 16:12)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR. Predstavleno akademikom N.N.Bogolyubovym.

S/0056/64/047/001/0147/0159

ESSION NR: AP4042383

THOR: Medvedev, B. V.

TLE: Equations of motion for radiation operators

URCE: Zh. eksper. i teor. fiz., v. 47, no. 1, 1964, 147-159

PIC TAGS: spinor, functional equation, particle collision, atrix function, operator equation, Hamilton equation

BSTRACT: This is a continuation of earlier work (ZhETF, v. 40, 26, 1961) where it was shown that the scattering matrix can be ompletely specified by means of current-like operators Λ_ν. In the resent paper equations of motion are established for these operaors by determining their functional dependence on a time-like functon $\varphi(y)$. The conditions for the solvability of the equations is iscussed. Several theorems are proved in connection with spinor

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ACCESSION NR: AP4042383

adiation operators. It is shown that the equations of motion (in ariational derivatives) play the role of ordinary Hamiltonian quations of motion in the Heisenberg representation when the scat- ering matrix is axiomatically constructed. Some applications of hese equations are suggested. "The author thanks N. N. Bogolyubov, . K. Polivanov, and B. M. Stepanov for a discussion of the results." rig. art. has: 41 formulas.

SSOCIATION: Matematicheskiy institut Akademii nauk SSSR (Mathe- atics Institute, Academy of Sciences SSSR)

BMITTED: 09Dec63

ENCL: 00

B CODE: MA, NP

NR REF SOV: 006

OTHER: 002

2/2

MEDVEDEV, B.V.; SUKHANOV, A.D.

S-matrices and the Heisenberg representation. Dokl. AN SSSR 165 no.2:305-308 N '65. (MIRA 18:11)

1. Matematicheskiy institut im. V.A. Steklova AN SSSR i Moskovskiy institut radioelektroniki i gornoy elektromekhaniki. Submitted March 18, 1965.

L 60347-65 EWT(1)

ACCESSION NR: AP5013908 UR/0056/65/048/005/1479/1489

AUTHOR: Medvedev, B. V.

TITLE: Axiomatic construction of the scattering matrix. 3. The Heisenberg and asymptotic representations

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 5, 1965, 1479-1489

TOPIC TAGS: quantum field theory, Heisenberg representation, axiomatic representation, scattering matrix, dispersion relation

ABSTRACT: This is a continuation of earlier papers by the author (ZhETF v. 40, 829, 1961 and v 47, 147, 1964), devoted to the development of a system of basic axioms for field theory as described in the author's book (with N. N. Bogolyubov and M. K. Polivanov, Voprosy teorii dispersionnykh sootnosheniy [Problems in the Theory of Dispersion Relations], Fizmatgiz, 1958). The earlier approach made use of both an asymptotic representation (in which the fields satisfy the free equations of motion and the commutation relations, but at the same time describe real particles) as well as the Heisenberg representation (such as all the current-like operators), and the present paper is aimed at establishing general rules for the

transition from one representation to the other. The concept of Heisenberg field

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L 60347-65

ACCESSION NR: AP5013908 4

operator is introduced and rules are established for the transformation from the asymptotic representation to the Heisenberg representation. These rules make it possible to clarify the relation of the aximatic method used to construct the scattering matrix in the present paper to other axiomatic approaches as well as to the usual Lagrangian method of constructing the scattering matrix. The relation between the axiomatic theory developed in the paper and the theory of Lehmann, Symanzik, and Zimmerman is also investigated. "I thank N. N. Bogolyubov, M. K. Polivanov, and A. D. Sukhanov for a discussion of the results." Orig. art. has: 33 formulas.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova AN SSSR (Mathematics Institute, AN SSSR)

SUBMITTED: 15Dec64 ENCL: 00 SUB CODE: GP

NR REF SOV: 007 OTHER: 004

L 15665-66 EWT(m)/T

ACC NR: AP6000209 SOURCE CODE: UR/0056/65/049/005/1518/1525

AUTHOR: Medvedev, B. V.

ORG: Mathematical Institute im. V. A. Steklov, Academy of Sciences, SSSR (Matematicheskiy institut Akademii nauk SSSR)

TITLE: On the axiomatic construction of the scattering matrix. 4. Lagrangian form of the theory

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 5, 1965, 1518-1525

TOPIC TAGS: scattering matrix, Lagrange equation, nuclear scattering

ABSTRACT: Parts 1, 2, and 3 were published in ZhETF v. 40, 826, 1961, v. 47, 147, 1964, and v. 48, 1479, 1965. It was shown in the earlier papers that in a very special case of renormalized theories without derivative couplings, the axiomatic formulation can be formally reduced to the Lagrangian form. In the present paper this result is extended to a more general case. The conditions that must be imposed on the Lagrangian in order for the scattering matrix to be causal and

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15665-66

ACC NR: AP6000209

unitary are determined, and it is shown that in a theory with a finite number of derivatives of sufficiently high order, necessitate the introduction of a non-Hermitian out-current, and consequently also a non-Hermitian Lagrangian in order to preserve the unitarity of the S-matrix. The connection between the concepts of current-like operators and the Lagrangian form of the theory is discussed. Author thanks M. K. Polivanov for numerous discussions, I. T. Todorov, B. M. Stepanov, and A. D. Sukhanov for an evaluation of the results, and the rector of the Winter School in Dubna A. N. Tavkhelidze for an invitation to lecture at this school. Orig. art. has: 32 formulas.

SUB CODE: 20,12/SUBM DATE: 31May65/ ORIG REF: 007/ OTH REF: 001

Card 2/2

MEDVEDEV, D.; KONOVALOVA, A.

Evaluation of the experience of the textile workers in the Kalinin Economic region. Sots. trud 7 no.8:118-123 Ag '62. (MIRA 15:10)

1. Glukhovskiy khlopchatobumazhnyy kombinat (for Medvedev). 2. Nachal'nik otdela truda i zarabotnoy platy Kupavinskoy tonkosukonnoy fabriki (for Konovalova).

(Kalinin Economic Region—Wages—Textile industry)

MEDVEDEV, D. D.

USSR/Engineering - Tools

Card 1/1

Author : Medvedev, D. D.

Title : Design of a Cutter for Cutting a Pair of Wheels

Periodical : Stan. i Instr. Ed. 1, 29-30, Jan/1954

Abstract : Description and configuration of a tool bit, with a steel alloy tip (March P18 and P9), for cutting rolling stock wheels. The cutter was designed by D. D. Medvedev. Drawing.

Institution : .....

Submitted : .....

MEDVEDEV, D.D.

Machining hoop steel. Stan. i instr.26 no.10:26-27 O'55.
(Machine shop practice) (MLRA 9:1)

S/121/60/000/012/009/015
A004/A001

AUTHOR: Medvedev, D. D.

TITLE: Tools for the Machining of Built-Up Metal

PERIODICAL: Stanki i Instrument, 1960, No. 12, pp. 23-24

TEXT: The author presents the results of investigations which were carried out to determine the criteria of blunting, the selection of the optimum grade of sintered-carbide tool bits and the optimum geometric parameters of tools used for the machining of built-up metal. The tools were tested during the machining of chrome-nickel alloy steel shafts 120 mm in diameter and 550 mm in length which were built up by UH-350 (TsN-350) electrodes 5 mm in diameter with two layers of longitudinal seams. The built-up layer had the following chemical composition: 0.22%-C; 2%-Mn; 0.92%-Si; 0.028%-P; 0.014%-S; 0.55%-Cr; 0.07%-V; 0.09%-Mo; 1.52%-Ni. The layer had a troostitic structure and a hardness in the range of HB 363-446. Machining took place with sintered carbide tools of the following geometric parameters: rake angle $\gamma = -10^{\circ}$, back angle $\alpha = 12^{\circ}$, main cutting edge angle $\varphi = 45^{\circ}$; end cutting edge angle $\varphi_1 = 15^{\circ}$, clearance angle of the main cutting edge $\lambda = 4^{\circ}$ and nose radius r = 1 mm. The cutting properties of the

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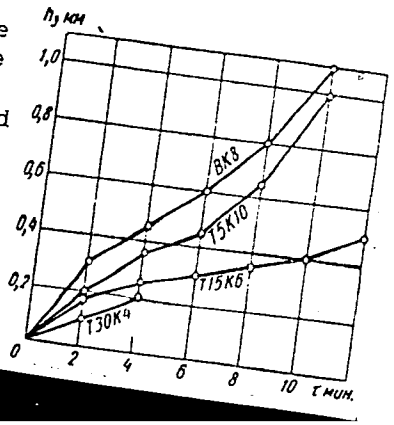
S/121/60/000/012/009/015
A004/A001

different sintered carbide bits were determined by the intensity of the tool wear during rough and finish turning. The back edge of the tool is particularly subjected to wear during turning the built-up metal. The chamfer of wear is widest at the top of the cutting tool. It was found that, if during rough machining the wear value of the back edge does not exceed 0.8 - 1 mm, a considerable breaking off of the tool top does not take place. For finish turning the wear of the back edge should not exceed 0.4 - 0.5 mm to ensure the necessary surface finish. Tool bits of the following sintered carbide grades were tested: BK8 (VK8), T5K10 (T5K10), T15K6 (T15K6), and T30K4 (T30K4). The cutting depth was 2 mm, the feed = 0.3 mm/rev and the cutting rate = 36 m/min. As it is shown in Figure 1 the best results were obtained with the T15K6 sintered carbide. Each tool was tested for 10 - 16 minutes, the wear was measured through every 2 minutes. It was found that with an increased titanium content in the sintered carbide the tool wear decreased. The optimum results during the finish turning of built-up metal were obtained with tools fitted with T30K4

Figure 1:



Tools for the Machining of Built-Up Metal

Figure 2:

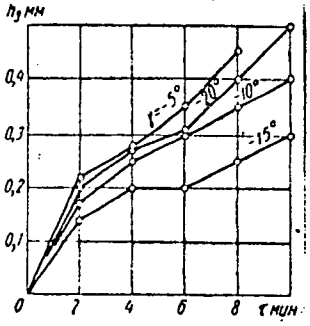
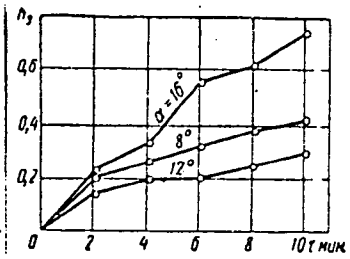


Figure 3:



carbide bits. To find the optimum tool geometry, the values of the rake and back angles were determined (according to the intensity of wear of the tool cutting edges during rough and finish turning). Tools with rake angles of -5, -10, -15, and -20° were tested. Based on the test data the wear curves of the tools with different rake angles were obtained for rough and finish turning, as shown in Figure 2. During rough turning the optimum durability was obtained with T15K6 sintered-carbide tools with a rake angle of -15°, while T30K4 sintered-carbide tools with a rake angle of -10° showed the best results in finish turning. Their wear proved to be 3 times lower than tools with a rake angle of $\gamma = -15^{\circ}$. Figure 3 shows the results of testing different back angles, which prove that a back angle of 12° shows the least wear. There are 4 figures.

Card 3/3

MEDVEDEV, D.D.

Machining weld-on alloyed steel. Stan.i instr. 33 no.3:33-34 Mr '62. (MIRA 15:2)

(Metal cutting)

MEDVEDEV, D.D., kand.tekhn.nauk; MAKSAKOVA, Ye.N., inzh.

Classification of large marine diesel parts for group machining.
Sudostroenie 28 no.7:52-53 Jl '62. (MIRA 15:8)
(Marine diesel engines) (Gear cutting)

MEDVEDEV, D.I., dotsent, kand.tekhn.nauk

Cup-shaped cutters for the machining of car wheel pairs. Trudy BITM no.21:122-129 '64. (MIRA 18:8)

L 61931-65 EWG(j)/EWG(r)/EWT(l)/FS(v)-3/EWG(v)/EWG(c) DD
ACCESSION NR: AT5019515 UR/3124/64/007/000/0165/0170

AUTHOR: Medvedev, D. I.

TITLE: The influence of accelerations on the RNA content of Betz cells in the motor zone of the cerebral cortex

SOURCE: Moscow. Universitet druzhby narodov. Trudy, v. 7, 1964. Voprosy meditsiny (Problems in medicine), no. 1, 165-170

TOPIC TAGS: acceleration, biological effect, RNA, Betz cell, cerebral cortex, brain, cytophotometry

ABSTRACT: Changes in the RNA content of cells are a convenient index of the functional state of tissue and the degree of injury to it under different conditions. In this study cytophotometry was used to study the ribonucleic acid content of ganglionic Betz nerve cells in the motor zone of the cerebral cortex in dogs subjected to transverse accelerations. Dogs were subjected to transverse accelerations of 8 g for 3 min and 12 g for 1 min in two series of experiments. Animals were killed 1 hr, 1, 3, 7, 15, 30, and 60 days after the experiment, and brain slices were prepared for cytophotometry (in the visible part of the spectrum). Comparing the optical density of experimental and control samples, it was possible to estimate the

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ACCESSION NR: AT5019515

relative increase or decrease of RNA in different parts of the cell (see Fig. 1 of the Enclosure). It was found that single such transverse accelerations cause definite changes in the RNA content of both the cytoplasm and nucleoli of Betz cells in the indicated part of the cerebral cortex. These changes were similar in both series of experiments and were manifested in a two-phase increase in the RNA content in both cytoplasm and nucleoli. The first increase, directly after acceleration, is the primary response of nerve cells, while the secondary RNA increase indicates a reparative reaction of protein synthesis. Results showed that RNA in the cytoplasm returns to the initial level earlier than in the nucleoli. Furthermore, restoration of the initial amount of RNA occurred more rapidly in the second series of experiments than in the first. These changes in the RNA content in Betz cells are reversible. In both series, practically complete normalization of the RNA content took place within two months in both cytoplasm and nucleoli. Orig. art. has: 1 figure. [JS]

ASSOCIATION: Kafedra gistologii universiteta druzhby narodov imeni Patrisa Lumumby (Department of Histology of the University of Friendship Between Peoples)

SUBMITTED: 00 ENCL: 01 SUB CODE: LS

NO REF SOV: 010 OTHER: 009 ATD PRESS: 4060

Card 2/3

L 61931-65

ACCESSION NR: AT5019515

ENCLOSURE: 01

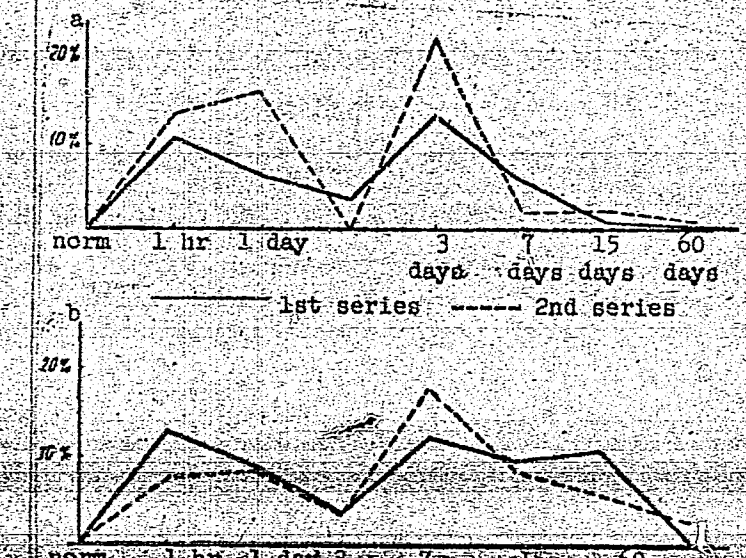

Fig. 1. Change in the RNA content in cytoplasm (a) and nucleoli (b) of Betz cells: on the horizontal axis—time of killing of dogs after the influence of acceleration; on the vertical axis—increase of RNA content after acceleration as compared with the RNA content in control dogs, %

Card 3/3 flh

MEDVEDEV, D.P.

Treatment of inguinal hernias in middle and old age. Trudy Izhev.gos. med.inst. 13:105-110 '51. (MIRA 13:2)

1. Iz fakul'tetskoy khirurgicheskoy kliniki Izhevskogo meditsinskogo instituta. Zaveduyushchiy kafedroy - prof. S.A. Flerov.
(HERNIA)

MEDVEDEV, D. P.

"Cancerous Degeneration Due to Atheroma," Khirurgiya, No. 3, 1949. Mbr., Faculty Surgical Clinic Izhevsk State Med. Inst., -c1949-.

MEDVEDEV, D. V.

"Ecologico-Geographical Laws in the Distribution of Oak Forests in the Northwestern Caucasus (Krasnedar Kray)," Dok. AN, 66, No. 4, 1949. Mbr., Timber Inst., Dept. Biol. Sci., Acad. Sci.-c1949-.

MEDVEDEV, D. V., and POPOV, V. V.

Measures Taken to Increase the Hydrometeorological Effectiveness of Field-Protectove Forest Belts. Soobshch. in-ta lesa AN SSSR, No 1, 1953, 77-81

Field-protective forest belts, created in a number of regions of the steppe zone of the European part of the USSR in 1931-1941, were of the openwork (skeleton) and blow-through types, but at the present time have been mostly converted to the nonblow-through type in consequence of the absence of necessary caretaking measures and unfortunate selection of tree varieties. The author concludes that it is necessary to introduce rapidly growing plants in place of dense shrubs and bushes. (RZhGeol, No 1, 1954)

SO W-31128, 11 Jan 55

ACCESSION NR: AT4042704 S/0000/63/000/000/0364/0368

AUTHOR: Medvedev, D. V.

TITLE: The dynamics of morphological changes in the brain cortex of dogs subjected to transverse accelerations

SOURCE: Konferentsiya po aviatsionnoy i kosmicheskoy meditsine, 1963. Aviatsionnaya i kosmicheskaya meditsina (Aviation and space medicine); materialy* konferentsii. Moscow, 1963, 364-368

TOPIC TAGS: acceleration effect, transverse acceleration, brain, cerebral cortex, dog

ABSTRACT: A study was made of the changes produced by the action of transverse accelerations on the motor analyzer area of the brain cortex of dogs. There were two series of experiments. In the first series, dogs were subjected to the action of an 8-g acceleration for 3 min, and in the second series to 12 g for one min. The dogs were killed after one hour and after 1, 3, 7, 15, 30, and 60 days. An examination of the materials obtained in the experiment shows that two types of changes take place in the area of the motor analyzer of the cortex due to the influence of the above indicated accelerations. The first type of morphological

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ACCESSION NR: AT4042704

change, such as hemorrhage, is the result of the direct action of acceleration, while the other type of change encountered apparently reflects the effects of compensating reactions of the neural tissues. This conclusion is drawn because the observed changes (the increased sorption properties of protoplasm and the increased amounts of hyperchromic cells among the large and small pyramids of layers III and V of the cortex, as well as the vacuolization of the caryochromic cells of layers II and VI of the cortex), correspond closely to the morphological picture of the brain during inhibition brought about by sleep. The increase of the RNA in neural cells observed immediately after acceleration can be regarded as a compensatory reaction due to functional stress to which the cells of the brain are subjected during the period of acceleration. At the same time, individual examples of mortality of nerve cells and the increased number of binuclear cells is evidence of specific reactive changes in the cortex of the brain. It should be noted that there are very few such changes and that the overwhelming number of changes which appears has a reversible character. A comparison of the results of the two series shows that changes produced by them were very similar. However, changes produced by the first series (8 g for three min) are more marked than those produced by the second series.

Card 2/3

MEDVEDEV, E.P., inzh. (Leningradskaya obl.)

Using the vibration and pressure method to manufacture precast reinforced concrete shells with a two-way curvature. Trudy NIIZFB no.21:212-215 '61. (MIRA 14:12)
(Vibrated concrete) (Roofs, Shell)

MEDVEDEV, E.P., inzh.

Determining the optimal parameters of large vibrated stampers.
Trudy NIIZHB no.33:363-378 '64. (MIRA 18:2)

MEDVEDEV, F.

Train the masses in concrete affairs. Sov. profsoiuzy 5 no.2:35-40 F '57. (MLRA 10:4)
(Trade unions) (Communist education)

YEMEL'YANOV, B.; MEDVEDEV, F.

Against the one-sided portrayal of trade-union activity.
Sov.profsoiuzy 5 no.6:19-22 Je '57. (MLRA 10:7)
(Russian literature--History and criticism)
(Motion-picture plays) (Trade unions)

MEDVEDEV, F. (g.Penza)

Wings of people's initiative. Sov. profsoiuzy 18 no.6:30-31 Mr '62. (MIRA 15:3)

1. Spetsial'nyy korrespondent zhurnala "Sovetskiye profscyuzy". (Penza Province--Amateur at activities)

MEDVEDEV, F.

Legislative initiative of trade unions. Sov. profsoiuzy 18 no.16:30-31 Ag '62. (MIRA 15:8)
(Trade unions) (Labor laws and legislation)

MEDVEDEV, F.; RODIONOV, M.

This is the beginning of communism. Sov. profsoiuzy 18 no.17: 7-10 S '62. (MIRA 15:8)
(Volgograd Province--Trade unions)

MEDVEDEV, F.

The title has been awarded, what is next? Sov. profsoiuzy 19 no.1:7-9 Ja '63. (MIRA 16:1)

(Socialist competition)

MEDVEDEV, F. (Volgograd); VLADIMIROV, A. (Volgograd)

What public control should be like? Sov. profsoiuzy 19 no.6: 18-23 Mr '63. (MIRA 16:3)

1. Spetsial'nyye korrespondenty zhurnala "Sovetskiye profsoyuzy". (Volgograd--Auditing and inspection)

MEDVEDEV, F.

Walk to communism side by side! Sov. profsoiuzy 19 no.7:15-17 Ap '63.
(MIRA 16:4)

(Moscow Province—Farm mechanization)

MEDVEDEV, Fjodor

Labor standardization committees in Soviet enterprises. Prace mzda 12 no.9:420-423 S '64.

MEDVEDEV, F. A.: Master Phys-Math Sci (diss) -- "The first work in Russia on the theory of sets and the theory of functions of a real variable". Moscow, 1958, published by the Acad Sci USSR. 16 pp (Acad Sci USSR, Inst of the History of Science and Technology), 125 copies (KL, No 6, 1959, 125)

MEDVEDEV, F.A.

Historical study of the concept of a measurable function. Ist.-mat. issl. no.12:481-492 '59. (MIRA 13:11)
(Functional analysis)

MEDVEDEV, F.A.

Origin of the set theory. Trudy Inst. ist. est. i tekh. 22:272-280 '59. (MIRA 12:10)
(Aggregates)

MEDVEDEV, F.A.

First manuals and monographs on the theory of sets. Trudy Inst.ist.est.i tekh. 28:237-249 '59. (MIRA 13:5)
(Aggregates)

MEDVEDEV, F.A.

Formation of the concept of the generalized limit. Trudy Inst. ist. est. i tekh. 34:299-322 '60. (MIRA 14:2)
(Integrals) (Topology)

MEDVEDEV, F.A.

Cauchy's concomitant quantities. Trudy Inst. ist. est. i tekh. 43:264-289 '61. (MIRA 15:1)
(Calculus, Integral)
(Calculus, Differential)

MEDVEDEV, F.A.; CHIRIKOV, M.V.

Work of the seminar on the history of mathematics at the Moscow State University. Vop.ist.est.i tekh. no.12:251-252 '62. (MIRA 15:4)

(Mathematics)

MEDVEDEV, F.A.

A.M. Liapunov's contribution to Stieltjes's integral theory.
Ist. mat. issl. no.14:211-233 '61. (MIRA 16:10)

(Calculus, Integral)

MIKHAYLOV, I.A.; POLYAKOVA, A.A.; KHMEL'NITSKIY, R.A.; IZOTOVA, N.P.; MEDVEDEV, F.A.; CHERNYSHEVA, M.M.

Mass spectrometer investigation of the hydrocarbon composition of the paraffin-naphthene component of distillate lubricants. Khim. i tekh. topl. i masel 9 no.12:15-20 D '64. (MIRA 18:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu isskusstvennogo zhidkogo topliva.

L 33258-65 EWT(m)/EPF(c)/T Pr-4 WE

ACCESSION NR: AP5006085 S/0204/65/005/001/0153/0159

AUTHOR: Polyakova, A. A.; Khmel'nitskiy, R. A.; Medvedev, F. A.

TITLE: Mass spectroscopic method for analyzing petroleum paraffins using unified characteristics

SOURCE: Neftekhimiya, v. 5, no. 1, 1965, 153-159

TOPIC TAGS: petroleum refining, petroleum paraffin, mass spectroscopy, paraffin hydrocarbon, unified characteristic, sensitivity coefficient, hydrocarbon analysis

ABSTRACT: An interpolation method was developed for calculating the relative sensitivity coefficients of C_{14} and higher alkanes for the mass spectrometer MKh-1303 without calibrating the instrument for each component. The method was then used for the group analysis of petroleum paraffins and high-boiling liquid paraffins. Sensitivity coefficients were calculated using the equation

$$y = 0.0009x^2 - 0.0449x + 1.5062$$

y being the coefficient of the relative ionization capacity of molecular ion peaks of n-paraffins and x the carbon number, permitting the computation of the composition of C_{14}-C_{20} n-alkane model mixtures from mass spectroscopic data with a 3.3% average relative error. A published method for group analysis of hydrocarbons

Card 1/2

L 33258-65

ACCESSION NR: AP5006085

(Anal. Chem. v. 31, 1959, 1531) and the correction of constants for the mass sensitivity of peaks by equations based on the interpolation method were used to determine the n-paraffin, iso-paraffin and naphthene content of model mixtures and of liquid 240-275C and 275-350C cuts with 4-5% and 7% relative error, respectively. The absolute sensitivity of the method is 0.5-1%. Orig. art. has: 3 figures, 3 tables and 9 formulas.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti (All-union petroleum processing scientific research institute)

SUBMITTED: 02Jan64 ENCL: 00 SUB CODE: FP, OP

NO REF SOV: 003 OTHER: 007

Card 2/2

L 25272-66 EWT(m)/T WE

ACC NR: AP6017744 SOURCE CODE: UR/0065/65/000/008/0008/0012

AUTHOR: Mikhaylov, I. A.; Polyakova, A. A.; Khmel'nitskiy, R. A.; Loktionova, Ye. L.; Medvedev, F. A.

ORG: VNII NP

TITLE: Hydrocarbon composition of dearomatized liquid paraffins

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 8, 1965, 8-12

TOPIC TAGS: hydrocarbon, aromatic hydrocarbon, petroleum refining, petrochemistry

ABSTRACT: The hydrocarbon composition of highly dearomatized liquid paraffins of different fractional compositions was investigated. It was shown that they consist of paraffin hydrocarbons of normal and branched structure, monocyclic naphthenes, and aromatic hydrocarbons. In marketed samples of paraffins of the Moscow Petroleum Refinery the content of normal paraffin hydrocarbons was 95%, paraffin hydrocarbons of branched structure 3-4%, naphthene hydrocarbons up to 1%, and aromatic hydrocarbons not more than 0.5%. Normal paraffin hydrocarbons were represented by compounds with from 14 to 22 carbon atoms per molecule, isoparaffin hydrocarbons — from 17 to 24, and naphthene — from 14 to 16 carbon atoms. Marketed paraffins of the Groznyy Petroleum-Oil Plant are characterized by a reduced content of normal-structure paraffin hydrocarbons (90% and lower) and a high content of isoparaffin hydrocarbons (from 8 to 17%). Distribution of normal-structure paraffin hydrocarbons in terms of number of carbon atoms in the molecule was the same as in paraffins from sulfur-containing petroleum stocks, but in a different quantitative ratio. Orig. art. has: 3 figures and 3 tables. [JPRS]

SUB CODE: 11, 07 / SUBM DATE: none

UDC: 665.41:553.98

Card 1/1 BLG

KHMEL'NITSKIY, R.A.; POLYAKOVA, A.A.; PETROV, A.A.; MEDVEDEV, F.A.; STADNICHUK, M.D.

Mass spectra and structure of organic compounds. Part 11: Mass spectra of 1,3-enyne germanium hydrocarbons. Zhur. ob. khim. 35 no.5:773-776 My '65. (MIRA 18:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

L 01306-67
ACC NR: AP5027029 SOURCE CODE: UR/0120/65/000/005/0172/0174

AUTHOR: Matveyev, Ye. L.; Polyakova, A. A.; Khmel'nitskiy, R. A.; Medvedev, F. A.

ORG: VNII of the Petroleum Processing Industry, Moscow (VNII neftepererabatyvayushchey promyshlennosti)

TITLE: Modification of the recording device of the MKh1303 mass-spectrometer

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1965, 172-174

TOPIC TAGS: mass spectrometer, oscillograph, circuit design/MKh1303 mass spectrometer, N-700 oscillograph

ABSTRACT: In order to reduce the time of recording, the regular EPP-09 recorder of the MKh1303 mass spectrometer was replaced by the N-700 oscillograph, which permits the recording of signals by 14 galvanometers of various sensitivities. The voltage range of measurements is from 0.005 to 50 v. An overcurrent protection was provided for each galvanometer circuit. A circuit arrangement of six M001lA galvanometers is schematically illustrated. The galvanometers operate within the 0—40 cps range with a maximum permissible current of 0.3 ma. The current sensitivity is about 1400 mm/ma.m. By using this method, it took only 18 min to obtain the mass spectra for molecular numbers of 50 to 400 under optimum operating conditions of the device. Orig. art. has: 3 figures.

SUB CODE: 07/4/ SUBM DATE: 18Aug64/

UDC: 621.384.8

Card 1/1

MEDVEDEV, Fedor Andreyevich; YUSHKEVICH, A.P., doktor fiziko-matem. nauk, otv. red.

[Development of the theory of sets in the 19th century] Razvitie teorii mnozhestv v XIX veke. Moskva, Nauka, 1965. 231 p. (MIRA 18:8)

LEPESHKOV, Stepan Ivanovich; MEDVEDEV, Fedor Konstantinovich;
LUSHCHEVSKIY, V., red.; AKIS, I., tekhn. red.

[From the bottom of the sea]So dna moria. Riga, Latviiskoe gos. izd-vo, 1962. 196 p. (MIRA 16:1)
(Baltic Sea—World War, 1939-1945—Naval operations—Submarine)

MEDVEDEV, F. P.

"Isotopic Exchange of Phosphorus Between Phosphate-Iron and Phosphoric Acid Esters", Dok. AN, 70, No. 1, 1950. Mbr., Moscow Order of Lenin State Univ. im. M. V. Lomonosov,-c1950-. Mbr., Gor'kiy State Univ. -c1950-.

DERBAREMDIKER, M.I.; SEREBRENNIKOVA, K.L.; TERNOVSKIY, V.A.; Prinimali uchastiye: SHAROV, P.M.; NOVIKOV, L.Z.; LUR'YE, B.I.; PIS'MEN, M.K.; KARABIN, A.I. [deceased]; KOSTIN, L.I.; FROLOV, V.P.; MEDVEDEV, E.V.; GELIMKHANOV, S.G.; BONDAR', V.G.; TIMOFEYEV, P.I.; MININA, L.V.; ARBEKOV, F.F.; NIKOLAYEV, N.I.; YAROSLAV, T.Ye.; NUDEL'MAN, V.G.

Gasification of mazut under pressure in a steam-oxygen blast. (MIRA 17:12)
Gaz. prom. 9 no.11:49-50 '64.

MEDVEDEV, F.Ye.; MEDVEDEVA, L.V., red.

[The trade-union group organizer; from trade-union group work practice in industrial and agricultural enterprises] Profgruporg; iz opyta rabety profsoiuznykh grupp na predpriiatiiakh promyshlennosti i sel'skogo khoziaistva. Moskva, Profizdat, 1964. 222 p. (MIRA 17:7)

POGORELOV, Viktor Ivanovich, kand. tekhn. nauk; MEDVEDEV, Georgiy Alekseyevich, konstruktor; YEVDOKIMOV, V.P., inzh., red.; FREGER, D.P., red. izd-va; GVIRTS, V.L., tekhn. red.

[New systems of regulating pressure in hydraulic drives]Novye sistemy regulirovaniia davleniia v gidroprivodakh Leningrad, 1962. 22 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Mekhanicheskaia obrabotka, no.23) (MIRA 16:2)

(Oil hydraulic machinery)

BR

S/133/62/000/008/001/003
A054/A127

AUTHORS: Medvedev, G.A.; Faynberg, L.B.; - Engineers; Mel'tser, V.V., Candidate of Technical Sciences

TITLE: The effect of the hot-rolling technology on the properties of sheets for deep drawing

PERIODICAL: Stal', no. 8, 1962, 732 - 737

TEXT: Hot rolled 08 кп (08kp) and 10 кп (10kp) sheets should be suitable for deep drawing without having to undergo additional heat treatment. The properties and, especially, relative elongation of sheets depend to a great extent on the grain size which, in turn, is affected by the temperature at the end of rolling and during cooling of the strips. The effect of the first factor on the grain size was studied on the 1450 mill of the Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine) with samples of 08 кп ВГ (08kpVG) car sheets, 2.5 - 3.0 mm thick, at various temperatures and specific reduction on the last stand of 6 - 9% and with intensive water-spray cooling. Raising the temperature at the end of rolling from 800 to 880°C gradually increases the

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The effect of the hot-rolling technology on ....

yield of flawless sheets to grain size from 52.3 to 100%. A higher end temperature of rolling also improved the mechanical characteristics, including relative elongation. However, the required end temperature of 880 - 890°C for sheets 2 - 2.5 mm thick is difficult to obtain. Therefore, other factors also affecting the grain size (cooling and reduction) have to be taken into consideration as well. Grain growth can be checked by intense cooling prior to coiling the strips. Cooling the strips by intense water spraying will also promote the removal of cinder during cooling. Tests carried out on the 1680 mill of the zavod "Zaporozhstal'" ("Zaporozhstal' Plant) yielded an optimum temperature range of 620 - 650°C for the strip prior to coiling. With such intensive cooling the grain structure of the sheet will be homogeneous over its entire cross section, whereas insufficient cooling causes the larger grains to concentrate at the surface and the smaller ones in the center of the cross section. The third factor greatly affecting the grain size is the degree of reduction on the last stand. Adequate tests were carried out with 08kpVG sheets 2 mm thick. At approximately identical rolling temperatures the most homogeneous grain structure and a higher value of relative elongation were obtained when the reduction on the last stand was increased to 16 - 18%. In this case, relative elongation over the entire

length of the strip was above 30%, while at reductions of 8.5% this parameter did not even come up to the standard. Higher reductions, however, increase the risk of warping. This can be prevented by ensuring the right convexity of the work rolls, by cooling the roll barrels lengthwise and by frequently changing the finishing stand. All three factors determining the grain size must be applied in combination. If, for instance, only the reductions are increased to 13 - - 13.5% while the end temperature of rolling is not raised above 820 - 840°C and water-spray cooling is not effective enough, a large-sized grain structure and a low value of relative elongation will be the result. Optimum conditions are obtained with an end temperature of rolling of 840 - 900°C beyond the last stand (i.e., 865 - 925°C at the beginning of the process), a temperature of 650°C during coiling and a reduction on the last stand of 15 - 17%. Cooling can be intensified by increasing the spraying surface of the cooling installation and the water pressure. The tests were carried out in cooperation with G.V. Mezentsev, A. Gabbasova and A.N. Tupikina. There are 5 figures and 2 tables.

ASSOCIATION: Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine)

ACC NR: AR6022460 SOURCE CODE: UR/0169/66/000/003/B043/B043

AUTHOR: Zaslavskaya, F. V.; Navrotskaya, V. S.; Tolmacheva, I. A.; Medvedev, G.A.

TITLE: Aerological patterns of foehns as observed in the Rion Valley OGMI expedition during September-October of 1962

SOURCE: Ref. zh. Geofiz, Abs. 3B278

REF SOURCE: Meteorol., klimatol. i gidrol. Mezhved. nauchn., vyp. 1, 1965, 17-22

TOPIC TAGS: weather forecasting, weather station, meteorologic observation

TRANSLATION: An account is given of the results of investigation of the wind and temperature patterns in the atmosphere, which was conducted by members of this expedition The purpose of the expedition was to investigate the foehn winds on the Surah Pass which rises to 1242 m above sea leval near the Mta-Sabueti station. The investigation lasted from September 19 to October 12. Supplementary data were obtained from Kutaisi Tbilissi and other points in the TransCaucasus. At Kutaisi the easterly wind, having a velocity of 5 m/sec, lowers the relative humidity to 50% in some 80% of the cases. Such wind could be classed as foehn. However, the foehn characteristics are seldom observed and its velocity is usually less than 5 m/sec. The relationship between the temperature and the air humidity on one hand and wind velocity on the other was found to be complex. As the wind velocity increases, the relative humidity decreases and

Card 1/2 UDC: 551.555.3(479.2)

ACC NR: AR6022460

the temperature of the air rises. The foehn effect is sharper at nighttime, when the directions of the foehn and the mountain wind may coincide. In the daytime, a valley wind might develop in the Rio Valley in a direction opposite to that of the foehn. As a result, the velocity of wind from the east is increased and that of the foehn, weakened. On the days of the foehn wind over the Surah range, an inversion or an isotherm may develop. The wind from the east may be felt as far away as 2 km. Occasionally at the Kutaisi Pass, the winds from the east were stronger than at the Surah Pass. N. Davydov.

SUB CODE: 04

Card 2/2

Medvedev, G. A

В. С. Цыбаков

О пропускной способности многолучевых каналов связи

Ю. И. Мартынов

К теории корректирующих кодов

10 июня

(с 10 до 16 часов)

А. Е. Башаринов,
В. С. Флейшман,
Г. С. Тисленский

Метод последовательного анализа в задачах обнаружения сигнала в многоканальных системах

И. Л. Теплов

Элементы теории потенциальной помехоустойчивости систем с дискретными сигналами

В. И. Митюшко

О помехоустойчивости одного способа определения временного положения импульсов

Г. А. Сергеев

К вопросу об оптимальной обработке метеорологических данных

4

10 июня

(с 18 до 22 часов)

Ю. С. Лезин

О пороговых сигналах при некогерентном накоплении с экспоненциальной весовой функцией

В. Е. Муравьев

Новые принципы анализа спектров

Г. А. Медведев

Помехоустойчивость приемника с конечным временем восстановления. Случай простейшего потока мешающих сигналов

И. И. Цуккерман

О помехоустойчивости координатно-кодового метода передачи телевизионных сообщений

11 июня

(с 10 до 16 часов)

А. Е. Башаринов

Нарастающая вероятность обнаружения импульсного пакета переменной длительности

Д. И. Филиппов

Идеальное радиоприемное устройство импульсных сигналов

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report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORiE), Moscow, 8-12 June. 1959

MEDVEDEV, G.A.; PARAYEV, Yu.I.

In regard to IA.I.Khurgin's article "Effect of a pulse process with indipendent intervals on a capacitative storage circuit." Radiotekh. i elektron. 5 no.10:1745-1746 O '60. (MIRA 13:10)
(Pulse techniques (Electronics))
(Khurgin, IA.I.)